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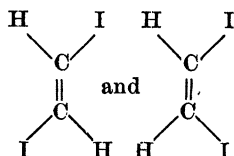
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## THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis of December 4, 1899, the following subjects were presented:

Dr. Edward H. Keiser talked informally on Some Derivatives of Acetylene, exhibiting specimens of the new liquid acetylene iodide discovered by him in January, 1899. He described the methods of making the compound, and gave an account of its chief physical and chemical properties. The liquid acetylene diiodide solidifies at  $-21^{\circ}$  C. and boils at  $185^{\circ}$ . It has the percentage composition and molecular weight represented by the formula  $C_2H_2I_2$ , and is isomeric with the well known solid acetylene diiodide. The speaker announced the discovery of a new method of making the liquid acetylene diiodide, namely, by heating the solid compound to  $260^{\circ}$  in a sealed tube. The solid compound is thereby partially converted into the liquid compound. Similarly, if the pure liquid diiodide is heated to  $260^{\circ}$  in a sealed tube, on cooling down, the liquid will be found to have been partially converted into the solid compound. All the facts known indicate that these two iodides of acetylene are stereoisomers, and that their configuration must be represented by the stereometric formulas:



Since Dr. Keiser has found that the solid acetylene diiodide can be converted into fumaric acid, it follows that the first of the two formulas represents the solid acetylene diiodide and the second one the liquid diiodide. Further experiments upon these compounds are under way, and the attempt will be made to convert the liquid diiodide into maleic acid.

Dr. L. Bremer demonstrated some tests for glucose by means of anilin dyes, showing that nearly all of the 'alkaline' anilin dyes, when rendered basic by the addition of sodium hydrate, become decolorized, or have their color greatly modified, on heating, in case glucose is presented. The reactions shown were speci-

ally pretty in the case of methylene blue and safranin.

Professor Nipher announced that he had nearly completed preparations for the measurement of wind pressures on the sides of the main building of Washington University. The pressures are to be measured at various points along the west end of the building, having a width of about 50 feet, and along the north front, which is something over 200 feet in length. Simultaneous measurements of wind pressure and wind velocity and direction will be made. The method used is that tested by him on the trains of the Illinois Central Railroad during the summer of 1897. The method was described in No. 1, Vol. VIII., of the Transaction of the Academy of Science of St. Louis. An invitation was extended to members to visit the University and inspect the apparatus.

Professor H. Aug. Hunicke spoke briefly on some observations which he had recently made on the boiling temperature of hydrocarbons, from which it appeared that when  $T$  is the boiling temperature (absolute scale),  $r$  is radius of gyration of the molecule, and  $a$  is a constant, then  $T^2 = ar$ . This holds for the entire series of saturated hydrocarbons, including all isomers. The speaker stated that his observations had not yet been extended beyond the series indicated.

WILLIAM TRELEASE,  
Recording Secretary.

## DISCUSSION AND CORRESPONDENCE.

## DARK LIGHTNING.

MAY I be allowed to make some comment, on the interesting article by Professor Wood on 'Dark Lightning.' He is mistaken in supposing that my results on the same subject have only appeared in a photographic journal. The first announcement was a note read before the Physical Society of London on June 22, 1889, which was published in the *Electrician*, the *Philosophical Magazine* and the *Proceedings of the Society*.

Further details were the subject of a paper read at the Newcastle meeting of the British Association in August of the same year, and an abstract of it appears on page 507 of the Annual Report. Since then there have been numerous

references in the reports of the British Association Committee on Meteorological Photography and other places.

So long ago as August, 1889, I had shown conclusive proofs that the phenomenon was not due to any difference in the refrangibility of the light of the spark and that of the reversing light. I showed that the light of the sparks themselves could effect reversal of the images of others. Perhaps I may be allowed to quote from the paper.

"A plate was then exposed in the camera to a series of sparks, then to the direct light of more sparks without the interposition of the lens, and finally to a second set of sparks. The images of the first set show reversal while those of the second are direct.

"Next a plate was exposed to one set of sparks and without removing it from the camera the light of some more was diffused by holding a sheet of ground glass in front of the lens. Finally a second set of sparks was photographed. The results were similar."

These two experiments enabled me to reproduce the phenomenon of a bright flash crossing a dark one, and the reversal of one flash by the diffused glare of another.

In the second place plates were exposed to a number of spark images and then to a tolerably pure spectrum. The result was reversal in all parts, and by varying the length of exposure to the spectrum it was shown that the reversing power was simply proportional to the direct actinic power, maximum reversal occurring when the direct actinic effect of the reversing light was equal to that of the spark images. I was, therefore, entitled to sum up thus:

"Differences of refrangibility, therefore, do not seem to lie at the root of the matter. Neither can a difference of intensity be the cause of the reversal, for the less intense the light of the spark the more easily is its image inverted. It seems to me that the extreme shortness of the exposure to the electric spark may be the explanation."

A similar conclusion was indicated by the fact that the image of a spark very much out of focus did not lose the property of reversibility.

But how were we to account for the experi-

ments showing that the spark images could be reversed by the light from other sparks? Was it possible that objects illuminated by these reversing sparks (card, objects in the room or ground glass) reflected or modified the light sufficiently to change its action on the photographic film?

I also tried to imitate the phenomena by brief exposure to other luminous objects trying in turn slits illuminated by gas, lime-light, magnesium and sunlight. I had no arc lamp available then. Here Professor Wood has done better, my results were nil and I congratulate him on his success.

However I should like to suggest that it is just possible that light from a source whose excitement is electrical *may* differ from other kinds of light in some manner at present unknown and that it is not safe to regard it as proved that the time element is the only one involved until the phenomena have been repeated without employing electricity at all.

For ten years the facts have been before the world. They were partly verified eight or nine years ago by Mr. Shelford Bidwell and it is highly satisfactory to find them verified again in so many particulars, by another physicist who has reached the same conclusions by means of somewhat different experiments.

ARTHUR W. CLAYDEN.

ROYAL ALBERT MEMORIAL COLLEGE,  
EXETER.

#### SOCIOLOGY AND PSYCHOLOGY.

TO THE EDITOR OF SCIENCE: The relation of sociology to psychology suggested by Professor F. H. Giddings in his article, 'Exact Methods in Sociology' (*Popular Science Monthly*, December, 1899), is so misleading that it demands a word of protest from the psychologist. We must regard it as a capital mistake when any sociologist tries to make his science a means of measuring psychological quantity. Thus, when Professor Giddings (p. 155) would measure the 'intelligence' of societies by comparative statistics of literacy, for instance, he overlooks such facts as these: that mere reading, like talking, signifies little—the main point being what is read, whether Hegel or the yellow journal—and that how much is understood